

Deliverable For:

**Gateway Cities Traffic Signal Synchronization
and Bus Speed Improvement Project**

Atlantic Blvd./ I-710 Corridor

Deliverable 2.5.3

Version 1

**Local Control Center Analysis and
Recommendations Report**

Draft

Submitted To:

**Los Angeles County
Department of Public Works**

Submitted By:

Siemens ITS

April 11, 2005

Revision History

Version	Date Submitted	Comments
2.5.3 Draft Version 1	April 11, 2005	Initial submittal

TABLE OF CONTENTS

1.	INTRODUCTION	1-1
1.1.	Background	1-1
1.2.	Relationship with the Countywide Arterial Management System	1-3
1.3.	Purpose	1-4
1.4.	Agencies Involved in this Report	1-4
1.5.	Organization of Document	1-5
1.6.	Referenced Documents	1-6
2.	LCC RECOMMENDATIONS METHODOLOGY	2-1
3.	LCC SITE ANALYSIS	3-1
3.1.	Corridor Architecture	3-1
3.2.	Resources and Requirements for LCC Sites in the Corridor	3-5
3.2.1.	<i>City of Bell</i>	3-5
3.2.2.	<i>City of Bell Gardens</i>	3-7
3.2.3.	<i>City of Cudahy</i>	3-9
3.2.4.	<i>City of Huntington Park</i>	3-11
3.2.5.	<i>City of Maywood</i>	3-14
3.2.6.	<i>City of Signal Hill</i>	3-17
3.2.7.	<i>City of Vernon</i>	3-19
4.	LCC SITE RECOMMENDATIONS	4-1
4.1.	Stand Alone LCC	4-1
4.2.	ATMS and IEN Client LCC	4-4
4.3.	ATMS Client Only LCC	4-5
4.4.	IEN Client Only LCC	4-5
4.5.	Remote LCC	4-6

LIST OF TABLES AND FIGURES

Figure 1-1: Atlantic Blvd./I-710 Corridor Project Area	1-2
Figure 1-2: The Information Exchange Network Architecture (IEN).....	1-3
Table 1-1 Summary of LCC Analysis Performed Under Forum Projects	1-5
Figure 2-1: Atlantic Blvd./I-710 Corridor Architecture.....	2-3
Table 3-1: Functionality Needed at Each Primary and Remote LCC Site in the Corridor.....	3-3
Figure 3-1: Location of Primary and Remote LCC Sites	3-4
Figure 3-2: Bell City Hall.....	3-5
Figure 3-3: Potential LCC Site Location at Bell City Hall	3-6
Figure 3-4: City of Bell Gardens Public Works	3-7
Figure 3-5: Potential LCC Site Location at Bell Gardens City Yards	3-8
Figure 3-6: Cudahy City Hall	3-9
Figure 3-7: Potential LCC Site Location at Cudahy City Hall	3-10
Figure 3-8: Huntington Park City Hall	3-11
Figure 3-9: Potential LCC Site Location at Huntington Park City Hall.....	3-12
Figure 3-10: Potential LCC Site Location at Huntington Park Public Works	3-13
Figure 3-11: Maywood City Hall	3-14
Figure 3-12: Potential LCC Site Location at Willdan Associate Office in City of Industry	3-15
Figure 3-13: Potential LCC Site Location at Maywood City Hall Police Department	3-16
Figure 3-14: Signal Hill City Hall.....	3-17
Figure 3-15: Potential LCC Site Location at Signal Hill City Hall	3-18
Figure 3-16: Vernon City Hall	3-19
Figure 3-17: Potential LCC Site Location at Vernon City Hall Deputy Director's Office.....	3-20
Figure 3-18: Potential LCC Site Location at Vernon Police Department Dispatch Center.....	3-21
Figure 3-19: Potential Equipment Room in Basement of Vernon City Hall	3-21
Figure 4-1: LCC Layout for the City of Vernon (Deputy Director's Office)	4-2
Figure 4-2: LCC Layout for the City of Vernon (Basement)	4-2
Table 4-1: Equipment list for the City of Vernon.....	4-3
Figure 4-3: LCC Layout for the Cities of Bell, Bell Gardens, Huntington Park and Maywood	4-4
Table 4-2: LCC Equipment List for Bell, Bell Gardens, Huntington Park and Maywood.....	4-4
Figure 4-4: LCC Layout for the City of Signal Hill.....	4-5
Table 4-3: Equipment List for City of Signal Hill	4-5
Figure 4-5: LCC Layout for the City of Cudahy	4-6
Table 4-4: LCC Equipment List for City of Cudahy and Police Department of Maywood	4-6

LIST OF APPENDICES

Appendix A: Atlantic Blvd. /I-710 Corridor Interview Meeting Minutes

1. INTRODUCTION

1.1. Background

The County of Los Angeles Department of Public Works Traffic Signal Synchronization, Operation and Maintenance (SOM) program has proven successful in creating an institutional infrastructure to coordinate the activities of the agencies responsible for traffic signal operations in the County. A key feature of this infrastructure is the Forums - groups of bordering agencies created to encourage and promote inter-agency cooperation. These Forums have enabled funding to be targeted at infrastructure improvements along arterial and arterial/freeway corridors in the County's sub-regions. Such projects are a critical part of what will eventually be a network of integrated ITS systems in Los Angeles County and in Southern California.

The Atlantic Blvd./I-710 Corridor is one such project which will result in arterial infrastructure improvements on north-south and east-west arterials along I-710 freeway in the South-East LA County (Gateway Cities) Forum.

As shown in Figure 1-1, the Atlantic Blvd./I-710 project area consists of 642 intersections in the following 15 different jurisdictions, comprising 13 cities, the County and Caltrans.

- Los Angeles County
- Caltrans
- City of Bell
- City of Bell Gardens
- City of Commerce
- City of Compton
- City of Cudahy
- City of Huntington Park
- City of Long Beach
- City of Lynwood
- City of Maywood
- City of Paramount
- City of Signal Hill
- City of South Gate
- City of Vernon

The objective of this project is to design, develop and deploy Advanced Traffic Control system(s) (ATMS) in the corridor so that the signals in the Project area can be synchronized across the jurisdictional boundaries. This project concentrates on the needs of the agencies in this corridor with respect to signal synchronization and recommends improvements to field infrastructure (including controllers, loops, detectors, and communications) and central traffic control systems to meet those needs.

When successfully completed, each of the agencies responsible for traffic signal operations in the Atlantic Blvd./I-710 Corridor will have full access to a ATMS that monitors and controls the traffic signals under their jurisdiction. Agencies will be able to synchronize their signals with neighboring agencies, and exchange traffic information in real-time. Agencies will also be able to exchange data with other agencies in the Gateway Cities region. This will allow the agencies to respond to recurrent and non-recurrent congestion in a coordinated fashion across the jurisdictional boundaries.

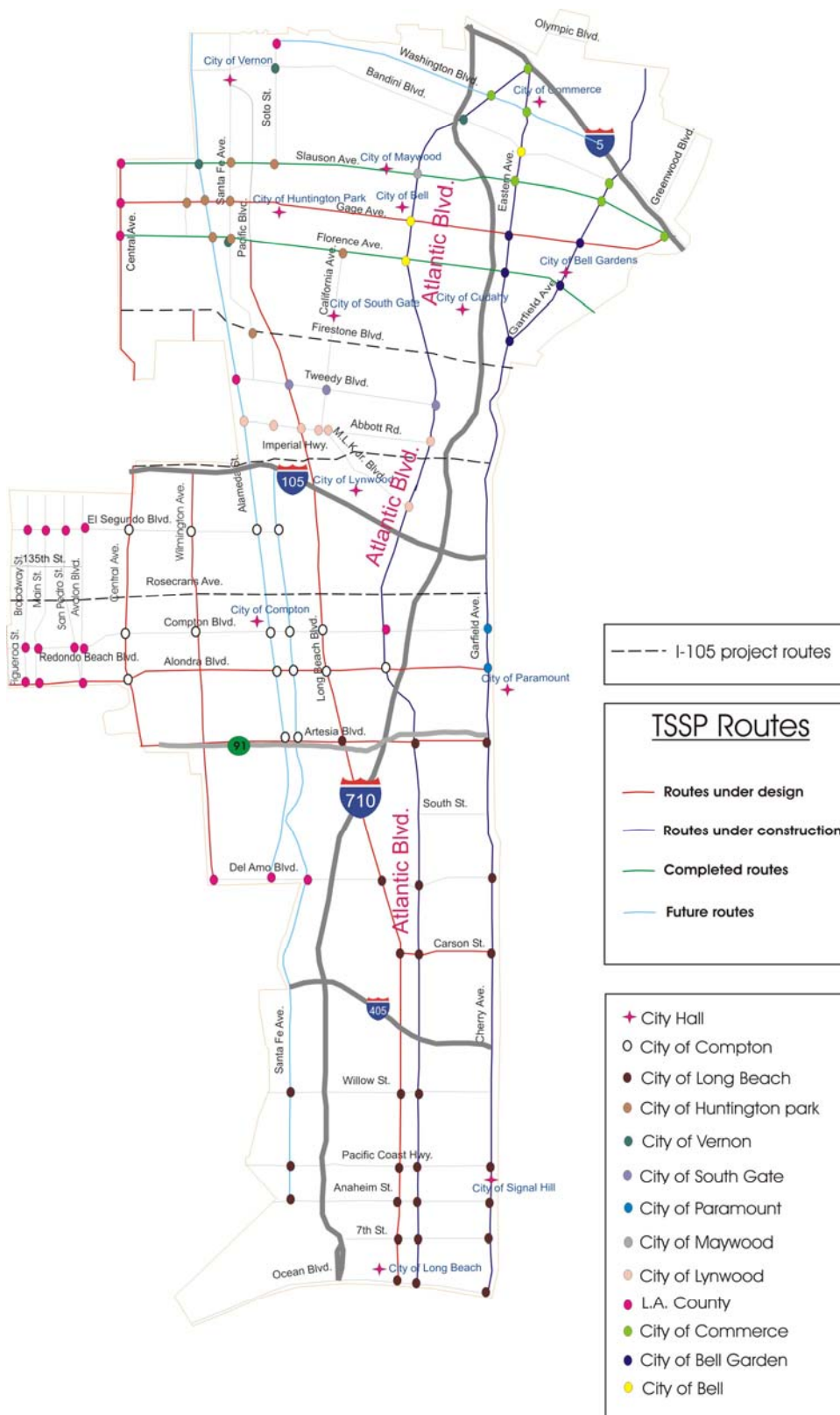


Figure 1-1: Atlantic Blvd./I-710 Corridor Project Area

1.2. Relationship with the Countywide Arterial Management System

The County DPW has developed a system architecture for integrating Advanced Traffic Management Systems (ATMS) for arterial traffic control systems into a regional framework to support the above operational goals. This is the Information Exchange Network architecture (IEN) represented in Figure 1-2. This is the architecture that will be followed in the design of the Atlantic Blvd./I-710 Project.

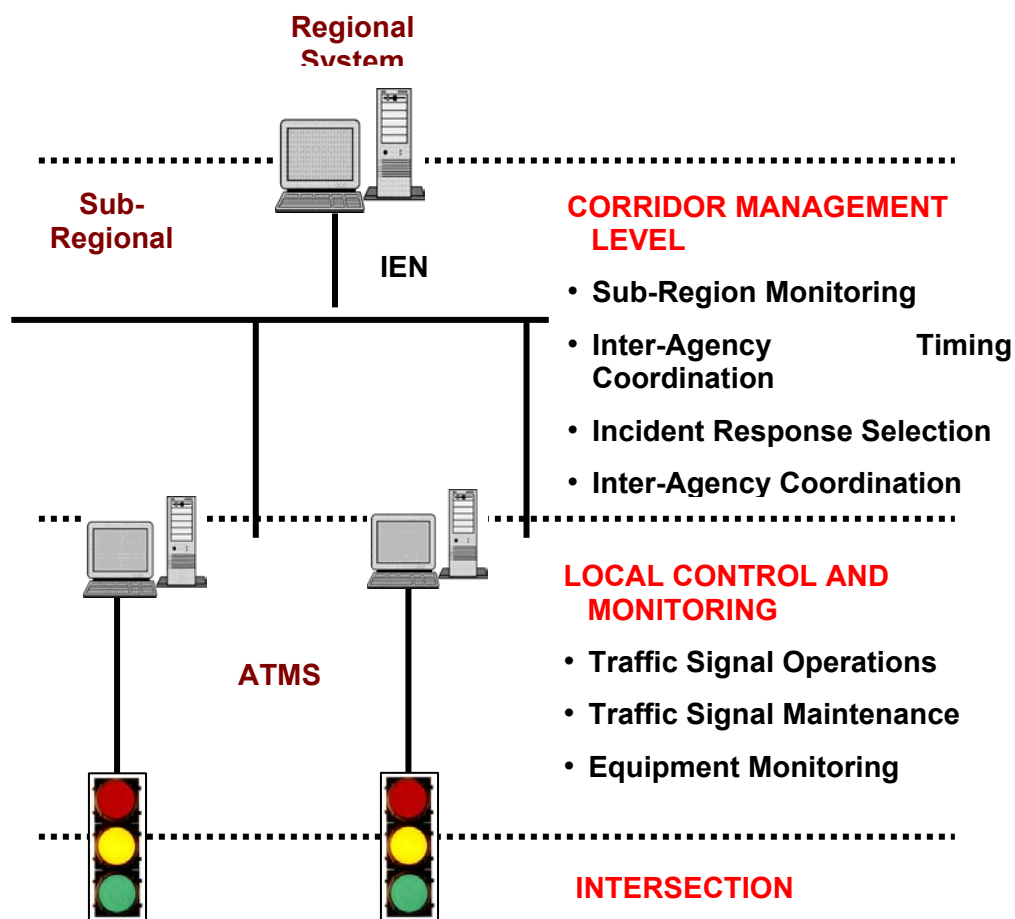


Figure 1-2: The Information Exchange Network Architecture (IEN)

The IEN architecture supports traffic signal operations in three levels. The local level comprises the day-to-day, traffic signal operations carried out by the individual agency – signal timing, maintenance and response to local traffic conditions and events. The Corridor level supports inter-agency coordination and joint signal operations – coordination across jurisdictional boundaries, exchange of local traffic data, and joint

response to traffic conditions and events that affect more than one jurisdiction. The final level is the regional level. This permits the arterials of regional significance to be monitored and managed as a single entity (as Caltrans does with the freeway system). Multi-agency, cross-corridor data exchange is supported permitting a countywide response to traffic conditions and major events. The physical elements of the architecture are ATMS, interfaces between the ATMS and the regional system, workstations to display shared data (which may or may not be combined with the ATMS), and servers for the collection/transfer of data and to support corridor and regional functions. These components are connected via a communications network known as the Information Exchange Network (IEN). The design of the IEN is being developed as part of the East San Gabriel Valley (ESGV) Pilot Project. The initial application of this structure in the Gateway Cities region is being done under the auspices of the I-105 Corridor Project which has jurisdictions in common with the Atlantic Blvd./I-710 Project.

The Atlantic Blvd./I-710 Project assumes the availability of the IEN at the corridor and regional levels. The project is focused upon the selection of traffic control systems and integration of those systems into the IEN at the local level. The eventual design will include IEN workstations at the local level. These are being defined as part of other projects. The design of the traffic control systems will, however, take into account the interface to the IEN and its requirements at the local level.

1.3. Purpose

This Local Control Center (LCC) Analysis and Recommendations Report evaluates each participating City's LCC physical layout to derive the most effective, reliable, and economical locations for the local City control sites and computer systems to be implemented with this project. The methodology for recommending the LCC sites and the potential impacts on the existing facilities in placing the local City control sites at the recommended locations are also discussed.

1.4. Agencies Involved in this Report

The Atlantic Blvd./I-710 Corridor Project encompasses several jurisdictional boundaries. Some of these jurisdiction overlap with other Forum projects. This report, the Local Control Center Analysis and Recommendations Report, covers seven agencies (Bell, Bell Gardens, Cudahy, Huntington Park, Maywood, Signal Hill and Vernon) for which the LCC Analysis has not been performed in other Forum projects. Table 1-1 shows all the agencies involved in the Atlantic Blvd./I-710 Corridor Project and wherever relevant, the Forum project under which LCC analysis has previously been performed for that particular agency.

In addition, it is assumed that County and Caltrans will use their existing facilities and equipment to view and control intersections in the Atlantic Blvd. /I-710 Corridor Project area.

Agency	LCC Analysis Performed as Part of		
	I-105 Corridor Project	I-5 / Telegraph Road Corridor Project	Atlantic Blvd./I-710 Corridor Project (Current Report)
Bell			X
Bell Garden			X
Commerce		X	
Compton	X		
Cudahy			X
Huntington Park			X
Long Beach	X		
Lynwood	X		
Maywood			X
Paramount	X		
Signal Hill			X
South Gate	X		
Vernon			X

Table 1-1 Summary of LCC Analysis Performed Under Forum Projects

1.5. Organization of Document

This document is organized in the following sections:

Section 1: Introduction

Presents the Project background and introduces the document.

Section 2: LCC Recommendations Methodology

Describes the methodology applied in the LCC site analysis and recommendations.

Section 3: LCC Site Analysis

Summarizes the information collected from each City's LCC site survey including the resources (staff, time, space) available at each site.

Section 4: LCC Site Recommendations

Presents recommendations for the LCC layout for each LCC category.

Appendix

Meeting minutes for LCC Alternative Analysis with Agencies

1.6. Referenced Documents

The following documents have been used as reference material in the preparation of this report:

Atlantic Blvd. / I-710 Corridor Project

- Deliverable 2.1.1: Stakeholders Operational Objectives and Individual City Reports
- Deliverable 2.3.1.1: ATMS and Communications User and System Requirements Report
- Deliverable 2.5.1.5: CCTV Location Analysis

I-5/Telegraph Road Corridor Project

- Deliverable 3.6: Requirements Analysis
- Deliverable 4.1.2: High Level Design Definition Report Final (including Vehicle Detection Technology)
- Deliverable 6.2 and 17.2: Recommendation Report for Local City Control Sites (Expanded Area)

2. LCC RECOMMENDATIONS METHODOLOGY

The information presented in this report is based on work done for a similar deliverable for I-5/Telegraph Rd. corridor project and the 'Statement of Work' for the Atlantic Blvd./I-710 Corridor Project.

As a starting point for this Task, Siemens ITS met individually with each City. The purpose of these meetings was to discuss the corridor architecture with each City and collect information on how cities plan to utilize the LCC in terms of functions to be carried out, staffing, and maintenance coordination. An important aspect of these meetings was to identify the size and location of the LCC sites within each City. Appendix A provides minutes of these meetings. Key points identified as a result of these meetings were:

- All the agencies, except for the City of Signal Hill and Vernon, confirmed that they intend for their traffic signals to be connected to the ATMS server at LA County DPW. The City of Vernon will host its own ATMS server and City of Signal Hill signals will continue to be connected to the City of Long Beach ATMS system.
- All agencies were able to identify the potential location of their LCC.
- All the agencies that were interviewed stated that they do not have the resources to staff the LCC outside regular business hours or for long periods of time. Most of the agencies will monitor the system on an exception basis, in response to an alarm from the system or during a traffic emergency situation.
- All the potential locations identified for the LCC site were within existing building structures and had existing air conditioning and electrical service. It is anticipated that in most cases no major upgrade will be required to install the LCC systems. In some location, furniture may need to be moved to make place for the LCC systems.
- All LCC sites are located within existing office spaces, thus no additional equipment for phone and fax needs to be provided. In addition, all cities indicated that space is limited and only one flat panel monitor per workstation should be provided.

The recommended architecture (see Figure 2-1) for the corridor is based on the functionality desired by each agency and their ability and willingness to operate and maintain the LCC equipment. Caltrans and LA County have existing locations which they plan on continuing to use for their LCC sites. Based on the interviews held with the seven cities identified for this task, and the functionality desired by each agency, the following five categories were identified for each of the Agencies involved.

- Level 1 - Agencies which will host ATMS Client and IEN Client functions
 - Bell
 - Bell Gardens
 - Huntington Park
 - Maywood

- Level 1a – Agencies which will host only ATMS Client function
 - Signal Hill
- Level 1b – Agencies which will host only IEN Client function
 - Cudahy
- Level 2 - Agencies which will host ATMS server and IEN server functions for their own jurisdictions.
 - Vernon
- Level 3 - Agencies which will host ATMS server and IEN server functions for their jurisdiction as well as other City(s)
 - LA County

Based on the information collected in the interviews, Siemens ITS carried out an LCC site analysis for each City which is presented in the next section (section 3), and developed a recommendation for the LCC layout, which is presented in the last section (Section 4).

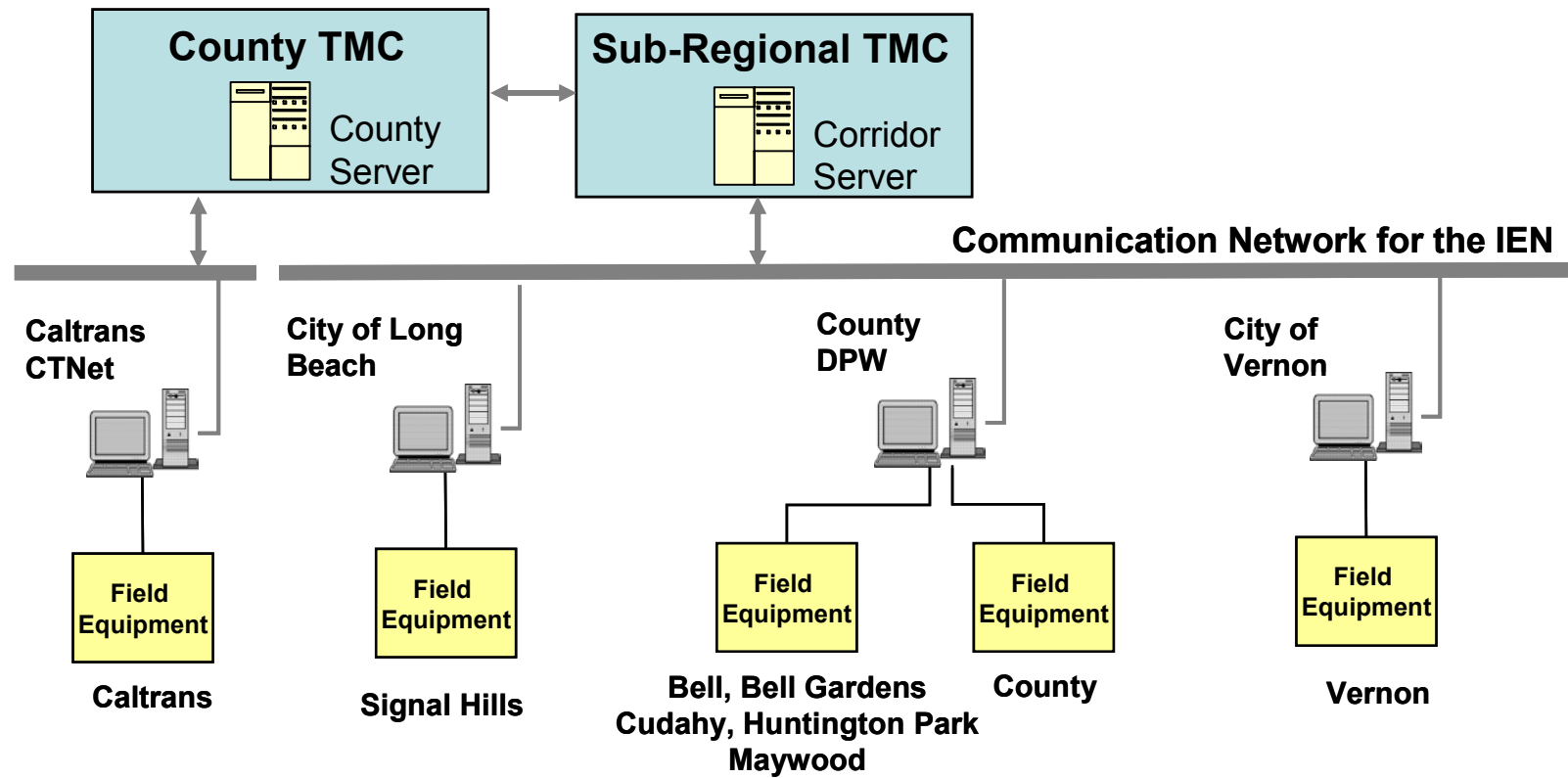


Figure 2-1: Atlantic Blvd./I-710 Corridor Architecture

3. LCC SITE ANALYSIS

3.1. Corridor Architecture

As part of a previous task, Task 2.1: Stakeholders Operational Objectives Report, and this current task, all the agencies involved in the Atlantic Blvd. / I-710 Corridor project were interviewed and the functionality desired by each City for their LCC site was identified. Table 3-1 presents a summary of these findings with the addresses of all the LCC Sites identified, and Figure 3-1 presents a map showing the physical locations for the Primary and Remote LCC sites for each agency. Most agencies identified only one location for the LCC systems in the City, and that location was categorized as Primary LCC Site. Some Cities identified multiple locations, and the subsequent location was classified as a Remote LCC Site.

City	Address	ATMS Server	ATMS Client Workstation	IEN Server	IEN Client Workstation	CCTV Monitoring	CCTV Display Equipment
Bell							
Primary LCC Site							
City Hall	6330 Pine Ave. Bell, CA 90201		X		X	X	
Bell Gardens							
Primary LCC Site							
Maintenance Yard	8327 S. Garfield Ave. Bell Gardens, CA 90201		X		X	X	
Cudahy							
Primary LCC Site							
City Hall	5220 Santa Ana St., Cudahy, CA 90201				X	X	
Huntington Park							
Primary LCC Site							
City Hall	6550 Miles Ave., Huntington Park, CA 90231		X		X	X	
Remote LCC Sites							
Public Work Yard	6900 Bissell St., Huntington Park, CA 90255		X		X	X	
Maywood							
Primary LCC Site							
Willdan Associates	13191 Crossroads Parkway North, Suite 405, Industry, CA 91746		X		X	X	
Remote LCC Sites							
Police Department	4319 E. Slauson Ave., Maywood, CA 90270				X	X	
Signal Hill							
Primary LCC Site							
City Hall	2175 Cherry Ave, Signal Hills, CA 90755		X		X		

City	Address	ATMS Server	ATMS Client Workstation	IEN Server	IEN Client Workstation	CCTV Monitoring	CCTV Display Equipment
Vernon							
<i>Primary LCC Site</i>							
City Hall	4305 Santa Fe Ave., Vernon, CA 90058	X	X		X	X	
<i>Remote LCC Sites</i>							
Police Department	4305 Santa Fe Ave., Vernon, CA 90058		X		X	X	

Table 3-1: Functionality Needed at Each Primary and Remote LCC Site in the Corridor

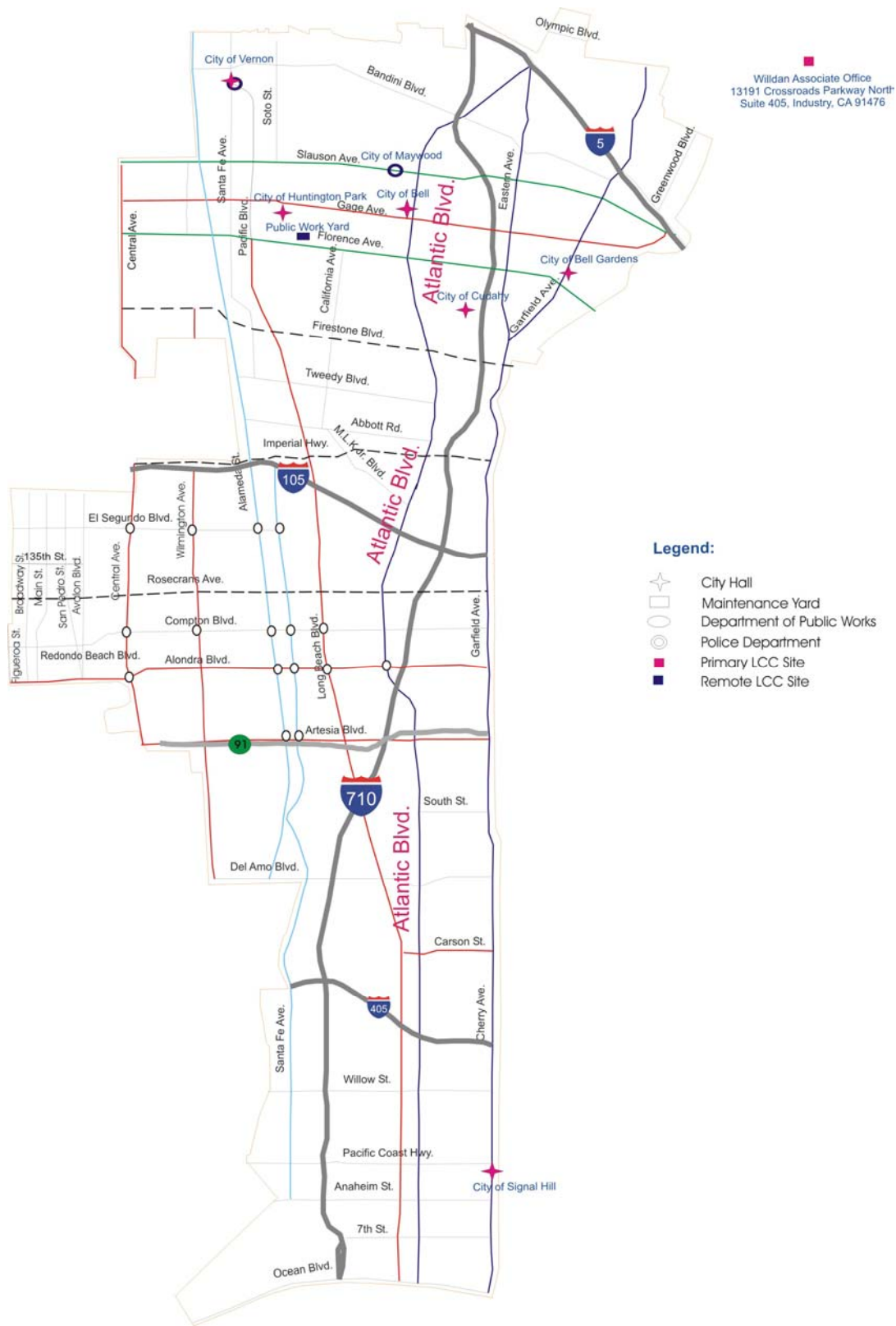


Figure 3-1: Location of Primary and Remote LCC Sites

3.2. Resources and Requirements for LCC Sites in the Corridor

This Section presents the requirements for the individual LCC sites together with the resources (staff, time, space) available at the cities in the corridor.

3.2.1. City of Bell



Figure 3-2: Bell City Hall

The City of Bell uses Type 170 controllers utilizing LA County (LACO) software. The City of Bell's signals will be connected to the ATMS server at the LA County DPW and the City will maintain control over its own signals. The City will use an ATMS workstation to monitor and control its own signals from City Hall (6330 Pine Ave.). The City is also interested in viewing regional traffic information and possibly incident responses via the IEN network; hence they would like an IEN workstation at City Hall.

The City is not expected to assign a dedicated person to monitor the ATMS and IEN workstation continuously. The City indicated that one operator would occasionally monitor the Client workstations, on an exception basis during normal business hours (8:00am to 4:00pm).

A potential location, approximately 72"X 48", was identified at the corner of the Deputy City Engineer's (Luis Ramirez) office which could be made available to host the ATMS and IEN workstations (Please see Figure 3-3). A Desk Console would be adequate for this purpose.

The location has electrical service and is inside an air-conditioned office.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.



Figure 3-3: Potential LCC Site Location at Bell City Hall

3.2.2. City of Bell Gardens



Figure 3-4: City of Bell Gardens Public Works

The City of Bell Gardens uses a mix of Type 170 and NEMA controllers. The City of Bell Gardens signals will be connected to an ATMS server at the LA County DPW. The City will maintain control over its own signals.

The City contracts out traffic engineering functions to a private contractor, AAE Inc.

The City of Bell Gardens would like to host an ATMS Client workstation and an IEN Client workstation at the City Yards location. The Traffic Engineer located at the City Yards (8327 Garfield Avenue) will monitor and control the signalized intersections for the City of Bell Gardens using the ATMS workstation. The Traffic Engineer will also be viewing regional traffic information provided by the IEN network using an IEN workstation. .

The City of Bell Gardens is not expected to assign a dedicated person to monitor the ATMS and IEN workstations continuously. The Traffic Engineer indicated that one operator would occasionally monitor the ATMS and the IEN workstations on an exception basis during regular hours.

A potential location, approximately 72" X 48", was identified along the wall in the City Traffic Engineer's office (Please see Figure 3-5). Some furniture will need to be rearranged to accommodate the ATMS and IEN workstations. A Desk Console would be adequate for this purpose.

The potential location has electrical service and is inside an air-conditioned room.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.



Figure 3-5: Potential LCC Site Location at Bell Gardens City Yards

3.2.3. City of Cudahy



Figure 3-6: Cudahy City Hall

The City of Cudahy uses Type 170 controllers utilizing LA County (LACO) software. The City of Cudahy's signals will be connected to an ATMS server at the LA County DPW. The City has very limited budget and staff and at this point does not intend to have an ATMS workstation located at the City. The City has indicated that the City Manager (George Perez) is interested in viewing regional traffic information via the IEN workstation, from his office at City Hall (5220 Santa Ana Street).

The City is not expected to assign a dedicated operator to monitor the IEN workstation; the City Manager will view the workstation occasionally during normal business hours.

The potential location for the IEN workstation is an existing computer desk in the City Manager's (George Perez) office in City Hall (Please see Figure 3-7). The location has electrical service and is in an air-conditioned room.

The City also indicated that their Police duties are carried out by the City of Maywood Police Department and hence it would be advantageous to have an IEN workstation at the Maywood Police Department, mainly for viewing regional traffic information and possibly responding to incidents. This is further discussed under the City of Maywood section.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.



Figure 3-7: Potential LCC Site Location at Cudahy City Hall

3.2.4. City of Huntington Park



Figure 3-8: Huntington Park City Hall

In previous discussions with the City, during the Stakeholder Operational Objectives report, the City had indicated that they wanted their own ATMS system. After further discussions during this task regarding operation and maintenance issues, the City decided that they had rather not take on the responsibility of maintaining additional equipment that comes with hosting the ATMS system.

The traffic signals for the City of Huntington Park will be connected to the ATMS server at the LA County DPW. The City of Huntington Park will retain control over its own signals. The City would like to host the ATMS Client workstation and IEN Client workstation at the following two locations:

- City Hall (6550 Miles Avenue)
- Public Works Yard (6900 Bissell Street).

The City is not expected to assign a dedicated person to monitor the ATMS and IEN workstations continuously at either of the two locations. One operator from the City will occasionally monitor the Client workstations. City monitoring would likely be on an exception basis during normal business hours (8AM to 4:30PM).

The City has shown an interest in wireless interconnect for their signalized intersections and has requested that any future interconnect for the signals should be wireless.

As shown in Figure 3-9 and Figure 3-10, the City staff identified potential locations within existing facilities to house the LCC equipment. The City Hall location is a 72" x 60"

space at the corner of the Assistant City Engineer's office. The Public Works Yard location is a 132" x 48" space along the wall of the supervisor's office. A Desk Console would be adequate for this purpose at both locations.

Both locations have existing air-condition and electrical services.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.



Figure 3-9: Potential LCC Site Location at Huntington Park City Hall



Figure 3-10: Potential LCC Site Location at Huntington Park Public Works

3.2.5. City of Maywood



Figure 3-11: Maywood City Hall

The City of Maywood uses Type 170 controllers utilizing LA County (LACO) software. The City's signalized intersections will be connected to the ATMS server at the LA County DPW.

City contracts out all engineering services to a private contractor, Willdan. Willdan serves as the City Engineer for both the Cities of Maywood and Paramount.

The City of Maywood would like to have the ability to monitor and control the intersections from the City Engineer's office located in the City of Industry. The City is also interested in viewing regional traffic information and possibly responding to incidents via the IEN network. The City of Maywood has requested an ATMS Client workstation and an IEN workstation to be installed at the City Engineer's office located in the City of Industry.

In addition, the City requested that an IEN workstation be installed at the Maywood Police Department to allow for viewing of regional traffic information for both the City of Maywood and Cudahy. Please note that the Maywood Police Department also performs police duties for the City of Cudahy and the City of Cudahy has also requested that an IEN workstation be installed at the Maywood Police Department.

The City Engineer (Willdan) is not expected to assign a dedicated person to monitor the workstations continuously. The City Engineer indicated that one person would occasionally monitor the ATMS and the IEN workstations located at Willdan on an exception basis during regular work hours (7:00am to 6:00pm). The IEN workstation located at the City Police Department will also be monitored on an exception basis throughout the day.

A potential location, approximately 96" X 48", in an existing cubicle was identified at the City Engineer's (Willdan) office. The location has existing electrical service and is inside an air-conditioned office (Please see Figure 3-12).

The potential location of the IEN workstation at the Maywood Police Department is along a wall in the conference room outside the Maywood Police Chief's office (Please see Figure 3-13).

A Desk Console would be adequate for the workstations at the Willdan office as well as the Maywood Police Department LCC Site.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.



Figure 3-12: Potential LCC Site Location at Willdan Associate Office in City of Industry



Figure 3-13: Potential LCC Site Location at Maywood City Hall Police Department

3.2.6. City of Signal Hill



Figure 3-14: Signal Hill City Hall

Currently, the signalized intersections along major arterials in the City of Signal Hill are connected to the City of Long Beach ATMS system.

It was confirmed that the City of Long Beach ATMS system will continue to host the City of Signal Hill traffic signals. The City of Signal Hill is interested in ATMS monitoring capabilities and would like an ATMS workstation at Signal Hill City Hall. At this time, the City does not want to install an IEN workstation. The City indicated that any regional coordination or incident management can be performed by the City of Long Beach.

The City is not expected to assign a dedicated person to actively monitor the ATMS workstation continuously. The City indicated that one operator would occasionally monitor the ATMS Client workstation on an exception basis during normal business hours.

A potential location, approximately 72" x 48", was identified for installation of the ATMS workstation outside the Director of Public Works office at City Hall (Please see Figure 3-15). The drafting table currently in that corner will need to be relocated. A Desk Console would be adequate for this purpose.

The location has electrical service and is inside an air-conditioned room.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

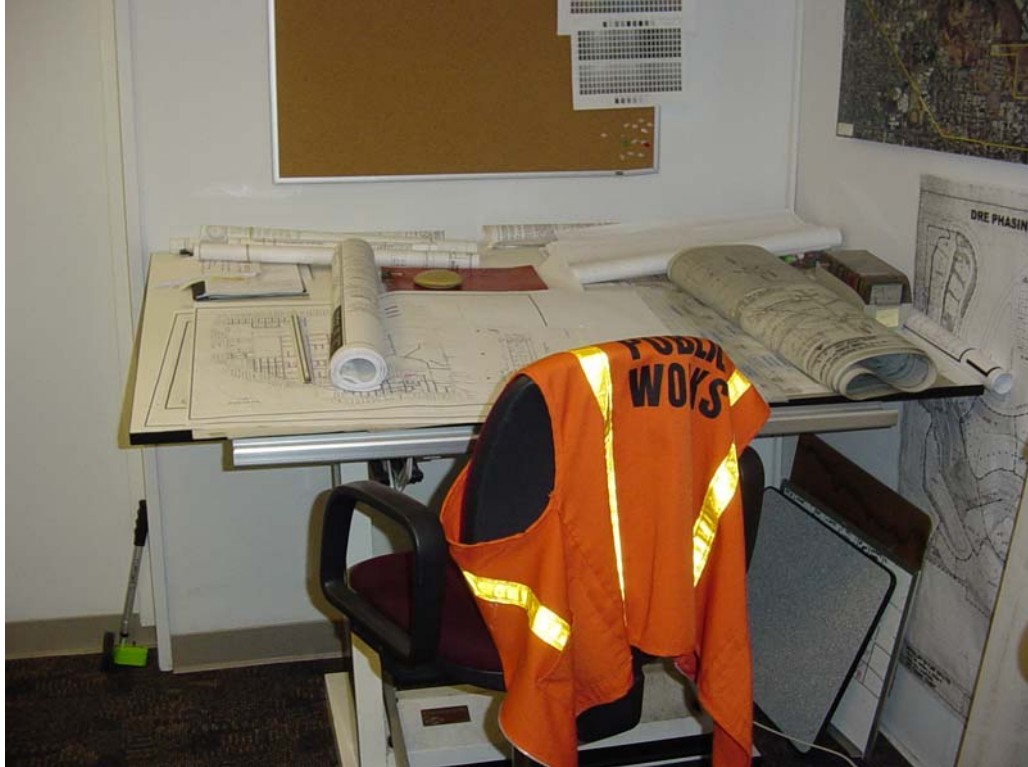


Figure 3-15: Potential LCC Site Location at Signal Hill City Hall

3.2.7. City of Vernon



Figure 3-16: Vernon City Hall

The City of Vernon will upgrade or replace the existing ATMS system (ARIES). It was confirmed that the City will host its own ATMS and IEN servers. The City would like to host ATMS & IEN workstations at City Hall in Deputy Director's (Sherwood Natsuhara) office located on the 2nd floor of City Hall (4305, Santa Fe Ave.). The City will use these workstations to monitor and control traffic intersections in the city and view regional traffic conditions respectively.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

The Department of Community Services and Water have a good working relationship with the City Police Department. The City Police Chief indicated that they are interested in monitoring and responding to incidents within and around the City limits. The City Police Department would like an ATMS and an IEN workstation located in their Dispatch Center in the basement of City Hall.

The Police Department is also interested in Pan/Tilt/Zoom CCTV cameras for traffic and incident monitoring and response. They would like the resolution of the CCTV cameras to be capable of identifying individual faces and vehicle license plates. They would prefer the CCTV system to be digitally encoded and the video distribution to be browser-based. The Police Department would like the CCTV system to be capable of digitally archiving the video.

The Police Department currently has a City Hall surveillance system which they would like to keep separate from any new CCTV system.

The City is not expected to assign a dedicated operator to monitor the ATMS and IEN workstations. The City indicated that one operator would occasionally monitor these workstations on an exception basis during regular City hall hours.

The ATMS and IEN workstations in the Police Department will be monitored 24 x 7 by the dispatch operator. The dispatch operator would also respond to traffic incidents that are sent through the IEN network.

A 120" x 24" space in the corner of the Deputy Director's office in City Hall on the 2nd Floor will be made available to the ATMS and IEN workstations. A Desk Console would be adequate for this purpose (Please see Figure 3-17).

The Police Department dispatch center has existing console which will accommodate the ATMS workstation and the IEN workstation (Please see Figure 3-18).

The City has identified a locked room in the basement for housing the ATMS and the IEN server equipment and any additional communications and CCTV equipment (Please see Figure 3-19). Access to the server room is through the Police Department and is very secure.



Figure 3-17: Potential LCC Site Location at Vernon City Hall Deputy Director's Office



Figure 3-18: Potential LCC Site Location at Vernon Police Department Dispatch Center



Figure 3-19: Potential Equipment Room in Basement of Vernon City Hall

4. LCC SITE RECOMMENDATIONS

This section presents recommendations for the physical layout of the LCC sites at each City. In section 2, each agency was placed into one of the following five categories based on the functionality desired by each City and their ability and willingness to operate and maintain the LCC equipment:

- Level 1 - Agencies which will host ATMS Client and IEN Client functions
- Level 1a – Agencies which will host only ATMS Client function
- Level 1b – Agencies which will host only IEN Client function
- Level 2 - Agencies which will host ATMS server and IEN server functions for their own jurisdictions.
- Level 3 - Agencies which will host ATMS server and IEN server functions for their jurisdiction as well as other City(s)

In this section each LCC Site location is analyzed for the equipment that is required for that location and then each location is categorized into five physical layouts for the LCC sites as follows:

1. Stand Alone LCC
2. ATMS and IEN Client LCC
3. ATMS Client Only LCC
4. IEN Client Only LCC
5. Remote LCC

All LCC sites are located within existing office space, thus no additional equipment for phone and fax is provided. In addition, all cities indicated that space is limited and only one flat panel monitor per workstation should be provided.

Sections 4.1 through 4.5 discuss in detail, the physical LCC Site layouts in the context of individual cities.

4.1. Stand Alone LCC

Only City of Vernon falls in this category and will host its own ATMS Server and IEN Server. The ATMS workstation and the IEN workstation will be located on the second floor of City Hall in the Deputy Director's office as shown in Figure 4-1. Both the servers and any CCTV and communication equipment will be located in the basement of City Hall and will be housed in two 19" racks as shown in Figure 4-2.

Table 4-1 provides the associated equipment list for the Stand Alone LCC site.

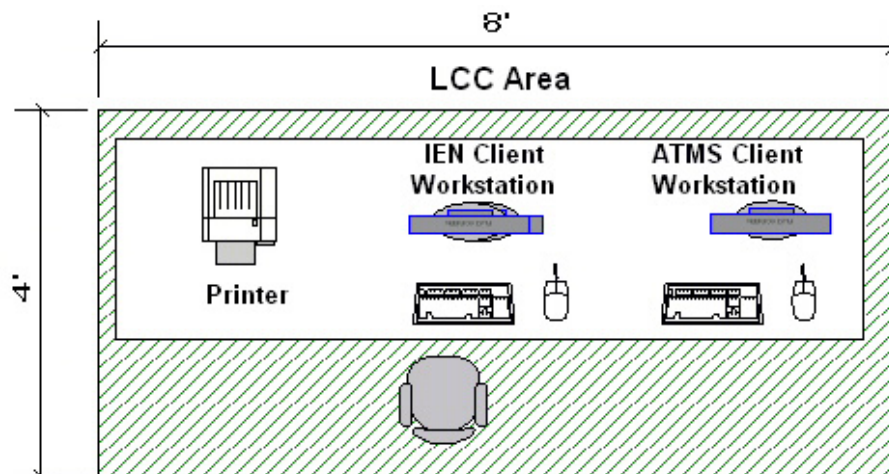


Figure 4-1: LCC Layout for the City of Vernon (Deputy Director's Office)

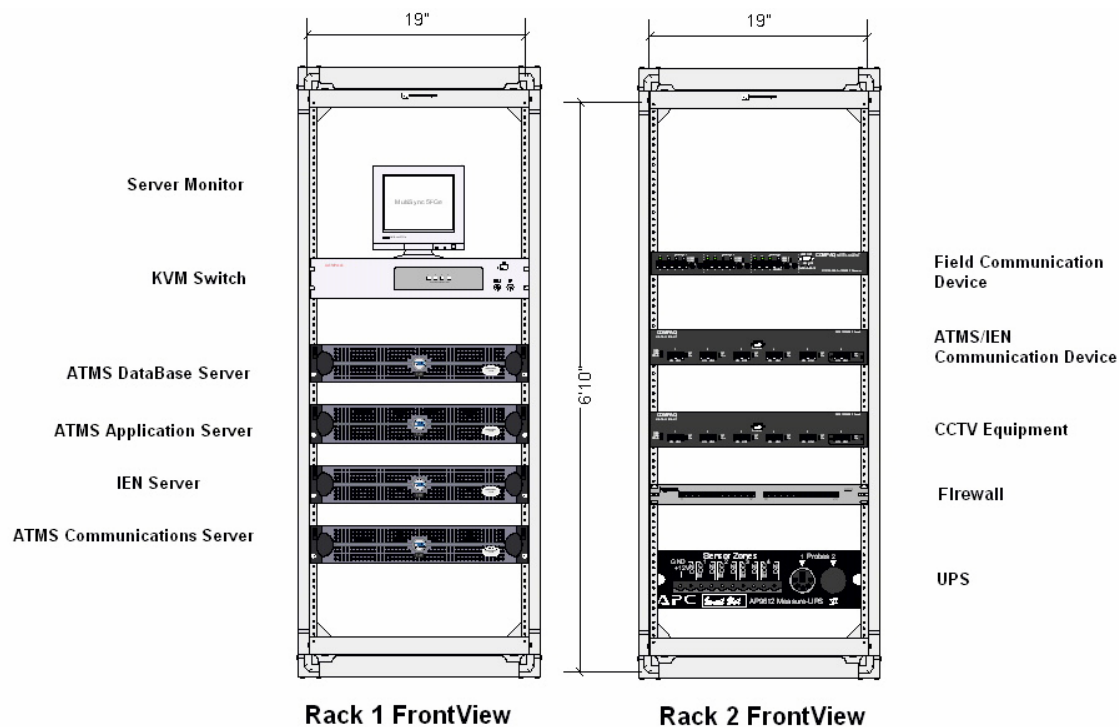


Figure 4-2: LCC Layout for the City of Vernon (Basement)

Description	Unit	Quantity
Hardware System:		
ATMS Application Server	Ea	1
ATMS Database Server	Ea	1
ATMS Communications Server	Ea	1
ATMS Client Workstation	Ea	1
IEN Server	Ea	1
IEN Client Workstation	Ea	1
ATMS/IEN Communication Device	Ea	1
CCTV Equipment	Ea	1
Field Communication Device	Ea	1
Firewall	Ea	1
Server KVM Switch	Ea	1
Server Monitor	Ea	1
UPS	Ea	1
Flat Panel Monitor (19")	Ea	2
Printer	Ea	1
Furniture:		
19" Rack	Ea	2
Desk Console	Ea	1
Chair	Ea	1
Misc:		
Cable, Connector, etc	LS	
Power Strip	Ea	4

Table 4-1: Equipment list for the City of Vernon.

4.2. ATMS and IEN Client LCC

The Cities of Bell, Bell Gardens, Huntington Park and Maywood fall into this category. Each City LCC will be equipped with two Client workstations (one ATMS Client workstation and one IEN Client workstation).

Figure 4-3 provides the layout for the LCC Sites and Table 4-2 provides the associated equipment list for each of the LCC sites.

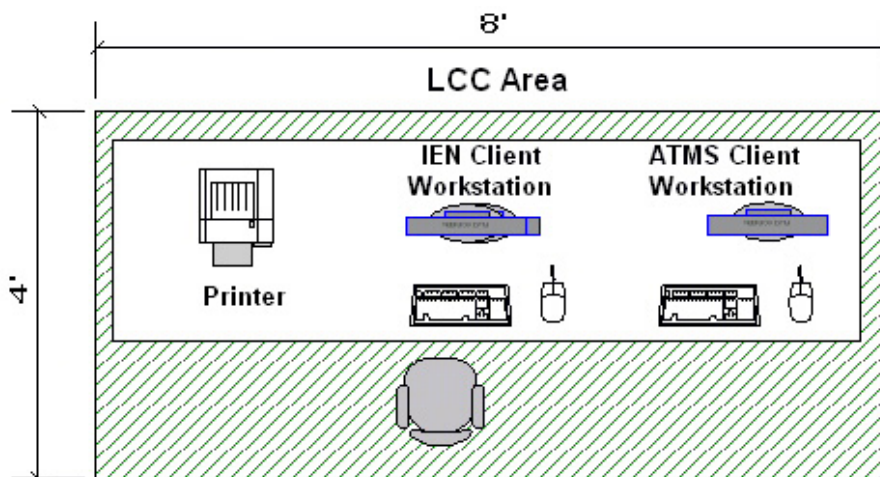


Figure 4-3: LCC Layout for the Cities of Bell, Bell Gardens, Huntington Park and Maywood

Description	Unit	Quantity
Hardware System:		
ATMS Client Workstation	Ea	1
IEN Client Workstation	Ea	1
Flat Panel Monitor (19")	Ea	2
Printer	Ea	1
Furniture:		
Desk Console	Ea	1
Chair	Ea	1
Misc:		
Cable, Connector, etc	LS	
Power Strip	Ea.	2

Table 4-2: LCC Equipment List for Bell, Bell Gardens, Huntington Park and Maywood

4.3. ATMS Client Only LCC

The City of Signal Hill falls into this category. Figure 4-4 provides the layout for this LCC Site, and Table 4-3 provides the associated equipment list.

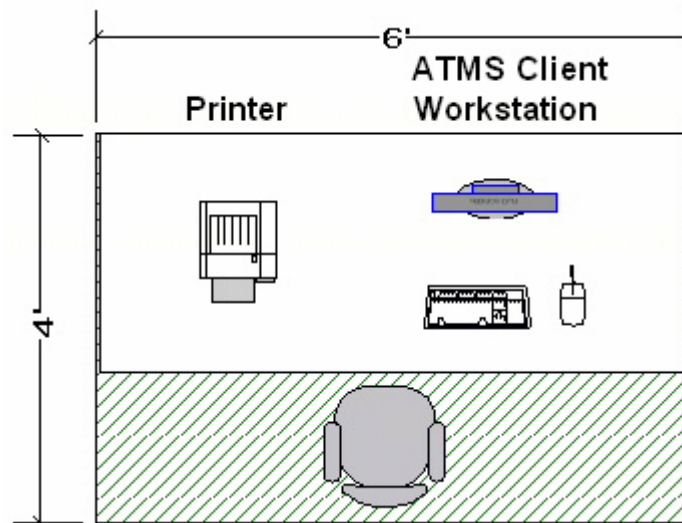


Figure 4-4: LCC Layout for the City of Signal Hill

Description	Unit	Quantity
Hardware System:		
ATMS Client Workstation	Ea	1
Flat Panel Monitor (19")	Ea	1
Printer	Ea	1
Furniture:		
Desk Console	Ea	1
Chair	Ea	1
Misc:		
Cable, Connector, etc	LS	
Power Strip	Ea.	2

Table 4-3: Equipment List for City of Signal Hill

4.4. IEN Client Only LCC

The City of Cudahy falls into this category. Figure 4-5 provides the layout for this LCC Site and Table 4-4 provides the associated equipment list.

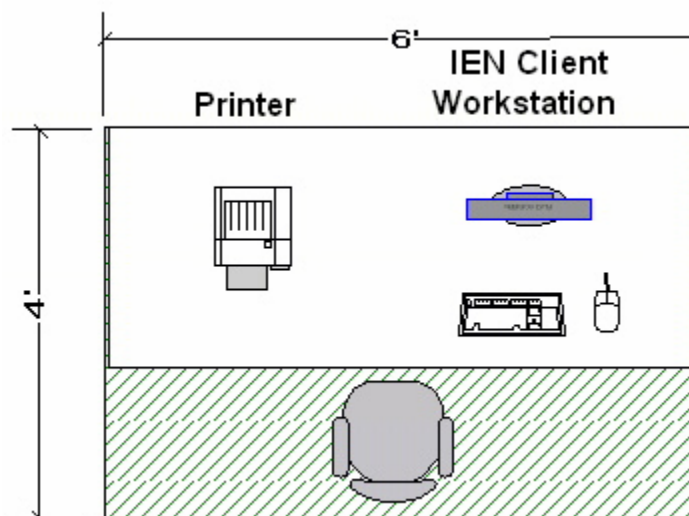


Figure 4-5: LCC Layout for the City of Cudahy

Description	Unit	Quantity
Hardware System:		
IEN Client Workstation	Ea	1
Flat Panel Monitor (19")	Ea	1
Printer	Ea	1
Furniture:		
Desk Console	Ea	1
Chair	Ea	1
Misc:		
Cable, Connector, etc	LS	
Power Strip	Ea.	2

Table 4-4: LCC Equipment List for City of Cudahy and Police Department of Maywood

4.5. Remote LCC

In addition to Primary LCC Sites, the following cities will also have a Remote LCC site:

- Huntington Park - Public Works Yard
- Maywood - Police Department
- Vernon - Police Department

The City of Huntington Park (Public Works Yard) and the City of Vernon (Police Department) Remote LCC Sites will be equipped with ATMS & IEN Client workstations and will have the same layout as the ATMS and IEN Client LCC. The City of Maywood

(Police Department) will be equipped with only IEN Client workstation and will have the same layout as an IEN Client Only LCC.

Appendix A: Atlantic Blvd. /I-710 Corridor Interview Meeting Minutes

Atlantic Boulevard/I-710 Corridor

LCC Location Recommendation

City of Bell

Final Meeting Minutes

March 8, 2005

Attendees:

Luis Ramirez	City of Bell
Carlos Alvarado	City of Bell
Fernando Villaluna	Los Angeles County DPW
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 6330 Pine Ave., Bell, CA 90201

LCC Systems

The City of Bell currently has Type 170 controllers with LA County (LACO) software. It was confirmed that the City of Bell intends for its traffic signals to be connected to the ATMS server at the LA County DPW. The City would like to monitor and control its own signals from City Hall (6330 Pine Ave.) using an ATMS Client workstation. The City is also interested in viewing regional information and possibly incident responses via the IEN network; hence they would like an IEN workstation at City Hall.

Staff

The City is not expected to assign a dedicated person to monitor the LCC systems continuously. The City indicated that one operator would occasionally monitor the Client workstations, on an exception basis during normal business hours (8:00am to 4:00pm).

Communications

All the signalized intersections that are part of the LA County TSSP routes are synchronized using WWV time based coordination, but are not otherwise interconnected to each other.

LCC Control Room

A potential location, approximately 72"X 48", was identified at the corner of the Deputy City Engineer's (Luis Ramirez) office which could be made available to the LCC system components. The location has electrical service and is inside an air-conditioned office.

No display equipment, other than one 19" flat panel LCD monitor for the ATMS and one 19" flat panel LCD monitor for the IEN is desired.

Miscellaneous

Computer equipment maintenance for the City is currently outsourced, and the same is anticipated for the maintenance of the ATMS and IEN workstations.

The City signal maintenance is performed by Republic and the City plans on continuing to use them in the future for signal maintenance.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Bell Gardens

Final Meeting Minutes

March 16, 2005

Attendees:

Pat Lang	City of Bell Gardens
John Oskoui	City of Bell Gardens
Fernando Villaluna	Los Angeles County DPW
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 8327 Garfield Ave., Bell Gardens, CA 90201

LCC Systems

It was confirmed that the City of Bell Gardens intends for its traffic signals to be connected to an ATMS server at the LA County DPW. The traffic engineering duties for the City of Bell Gardens is performed by AAE Inc. from the City Yards location (8327 Garfield Avenue). The Traffic Engineer is interested in monitoring and controlling the signalized intersections for the City of Bell Gardens, as well as viewing regional traffic information provided by the IEN network. The City of Bell Gardens has requested an ATMS and an IEN workstation at the City Yards location.

Staff

The City of Bell Gardens is not expected to assign a dedicated person to monitor the LCC systems continuously. The Traffic Engineer indicated that one operator would occasionally monitor the ATMS and the IEN workstation on an exception basis during regular hours.

Communications

Most of the signalized intersections in the City of Bell Gardens use WWV clocks for coordination. A few intersections along Eastern Avenue between Loveland and Live Oak Avenue have TWP inter-connect.

LCC Control Room

A potential location, approximately 72" X 48", was identified along the wall in the City Traffic Engineer's office. Some furniture will need to be rearranged to accommodate the

LCC systems. The potential location has electrical service and is inside an air-conditioned room.

No display equipment, other than one 19" flat panel LCD monitor for the ATMS and one 19" flat panel LCD monitor for the IEN workstation is desired.

Miscellaneous

The City has IT personnel that currently maintain its computer systems and it is anticipated that the new workstation maintenance will also be performed by the same personnel.

The City has contracted out the maintenance of the City signals to a private contractor and plans to continue using them in the future for signal maintenance.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Cudahy

Final Meeting Minutes

March 8, 2005

Attendees:

Luis Garcia	City of Cudahy
Carlos Alvarado	City of Cudahy
Fernando Villaluna	Los Angeles County DPW
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 5220 Santa Ana St., Cudahy, CA 90201

LCC Systems:

The City of Cudahy currently has mainly Type 170 controllers with LA County (LACO) software. It was confirmed that the City of Cudahy intends for its traffic signals to be connected to an ATMS server at the LA County DPW. The City has very limited budget and staff and at this point does not intend to have an ATMS workstation located at the City. The City has indicated that the City Manager (George Perez) is interested in viewing regional traffic information via the IEN workstation, from his office at City Hall (5220 Santa Ana Street). The City also indicated that their Police duties are carried out by the City of Maywood Police Department and hence it would be advantageous to have an IEN workstation at the Maywood Police Department, mainly for viewing regional traffic information and possibly responding to incidents.

Staff

The City is not expected to assign a dedicated operator to monitor the IEN workstation; the City Manager will view the workstation occasionally during normal business hours.

Communications

All the signalized intersections in the City use WWV clocks for coordination, but are not otherwise interconnected to each other.

LCC Control Room

The potential location is an existing computer desk in the City Manager's (George Perez) office in City Hall. The location has electrical service and is in an air-conditioned room.

No display equipment, other than one 19" flat panel LCD monitor for the IEN workstation is desired.

Miscellaneous

The City signal maintenance is performed by Republic and the City plans on continuing to use them in the future for signal maintenance.

Computer equipment for the city is currently outsourced and the same is anticipated for the maintenance of the new IEN workstation.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Huntington Park

Final Meeting Minutes

March 3, 2005

Attendees:

Patrick Fu	City of Huntington Park
Fernando Villaluna	Los Angeles County DPW
Arti Gupta	Siemens ITS
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 6550 Miles Ave. Huntington Park, CA 90255

LCC Systems:

In previous discussions with the City, during the Stakeholder Operational Objectives report, the City had indicated that they wanted their own ATMS system. After further discussions at this meeting, regarding operation and maintenance issues, the City decided that they had rather not take on the responsibility of maintaining additional equipment that comes with hosting the ATMS system.

It was confirmed that the City of Huntington Park intends for its traffic signals to be connected to the ATMS server at the LA County DPW. The City of Huntington Park would like to have the ability to monitor and control its signals. The City would like to host the ATMS Client workstations and IEN Client workstations at both the City Hall (6550 Miles Avenue) and Public Works Yard (6900 Bissell Street). The City understands that they would be responsible for equipment maintenance associated with all its ATMS & IEN workstations.

Staff

The City is not expected to assign a dedicated person to monitor the LCC systems continuously at either of the two locations. The City indicated that one operator would occasionally monitor the Client workstations. City monitoring would likely be on an exception basis during normal business hours (8AM to 4:30PM).

Communications

Currently there is no hard-wire cable interconnect between the signalized intersection in the City. All the intersections that are part of LA County TSSP routes are synchronized using WWV time based coordination. For any new interconnect, wireless mode of communication is preferred by the City.

LCC Control Room

Two potential locations were identified for the LCC, one at City Hall (6550 Miles Ave) and one at the Maintenance Yard (6900 Bissell Street). The City Hall location is a 72" x 60" space at the corner of the Assistant City Engineer's office. The Public Works Yard location is a 132" x 48" space along the wall of the supervisor's office. Both locations have existing air-condition and electrical services.

No display equipment, other than one 19" flat panel LCD monitor for the IEN and one 19" flat panel LCD monitor for the ATMS workstation at each location is desired.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Maywood

Final Meeting Minutes

March 10, 2005

Attendees:

William C. Pagett	City of Maywood
Fernando Villaluna	Los Angeles County DPW
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 4319 E. Slauson Ave., Maywood, CA 90270

LCC Systems

The City of Maywood currently has Type 170 controllers with La County (LACO) software. It was confirmed that the City of Maywood intends for its traffic signals to be connected to the ATMS server at the LA County DPW. Willdan is the City Engineer for both the City of Maywood and the City of Paramount, and would like to monitor and control the intersections for both these cities. The City Engineer is also interested in viewing regional traffic information and possibly responding to incidents via the IEN network. The City of Maywood has requested an ATMS Client workstation and an IEN workstation to be installed at the City Engineer's office located in the City of Industry. The City of Maywood Police Department also performs police duties for the City of Cudahy. The City has requested that the Maywood Police Department host an IEN Client workstation to be able to view traffic information for both the City of Maywood and Cudahy.

Staff

The City Engineer (Willdan) is not expected to assign a dedicated person to monitor the LCC systems continuously. The City Engineer indicated that one person would occasionally monitor the ATMS and the IEN workstation located at Willdan on an exception basis during regular work hours (7:00am to 6:00pm). The IEN workstation located at the City Police Department will also be monitored on an exception basis throughout the day.

Communications

All the signalized intersections in the City of Maywood use WWV clocks for coordination, but are not otherwise interconnected to each other.

LCC Control Room

A potential location, approximately 96" X 48", in an existing cubicle was identified at the City Engineer's (Willdan) office. The location has existing electrical service and is inside an air-conditioned office. The potential location of the IEN workstation at the Maywood Police Department is along a wall in the conference room outside the Maywood Police Chief's office.

No display equipment, other than one 19" flat panel LCD monitor for the ATMS and one 19" flat panel LCD monitor for the IEN workstation is desired at the City Engineer's office. One 19" flat panel LCD monitor will also be adequate for the IEN workstation at the Maywood Police Department.

Miscellaneous

The City of Maywood signal maintenance is performed by Republic and the City plans on continuing to use them in the future for signal maintenance. The maintenance of the computer workstations located at the City Engineer's office will be performed by Willdan while the maintenance of the workstation located at the Maywood Police Department will be performed by the Police IT personnel.

The City of Maywood has indicated that they are planning to upgrade the signal mast arm, cabinet and conduit along Atlantic Boulevard and Slauson Avenue. The City is also planning on installing video detection at the intersection of Atlantic Blvd. and Slauson Avenue.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Signal Hill

Final Meeting Minutes

March 8, 2005

Attendees:

Charlie Honeycutt	City of Signal Hill
Fernando Villaluna	Los Angeles County DPW
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 2175 Cherry Ave. Signal Hill, CA 90755-3799

LCC Systems:

It was confirmed that the City of Long Beach ATMS system will host the City of Signal Hill traffic signals. The City of Signal Hill is interested in ATMS monitoring capabilities and for this reason would like an ATMS workstation at Signal Hill City Hall.

The City does not intend to have an IEN workstation at City Hall, but they would like to discuss this with their traffic consultants before they make a final decision. The City indicated that any regional coordination or incident management can be performed by the City of Long Beach.

Staff

The City is not expected to assign a dedicated person to actively monitor the LCC systems continuously. The City indicated that one operator would occasionally monitor the ATMS Client workstation on an exception basis during normal business hours.

Communications

Currently, signalized intersections along the major arterials in the City of Signal Hill are connected to the City of Long Beach ATMS system.

LCC Control Room

A potential location, approximately 72" x 48", was identified for installation of the LCC system outside the Director of Public Works office at City Hall. The drafting table currently in that corner will need to be relocated. The location has electrical service and is inside an air-conditioned room.

No display equipment, other than one 19" flat panel LCD monitor for the ATMS workstation is desired.

Notes added 03/22/2005

The City has informed Siemens ITS that they are not interested in hosting an IEN workstation at the Signal Hill City Hall. Any regional coordination or incident response can be performed from the City of Long Beach

Atlantic Boulevard./I-710 Corridor

LCC Location Recommendation

City of Vernon

Final Meeting Minutes

March 3, 2005

Attendees:

Sherwood "Woody" Natsuhara	City of Vernon
Kevin Wilson	City of Vernon
Sol Benudiz, Chief of Police	City of Vernon
Fernando Villaluna	Los Angeles County DPW
Arti Gupta	Siemens ITS
Rayomand Bhadha	Siemens ITS
Charlie Zhu	Siemens ITS

Address: 4305 Santa Fe Ave., Vernon, CA 90058

LCC Systems

The City of Vernon will upgrade or replace the existing ATMS system (ARIES). It was confirmed that the City will host its own ATMS and IEN server. The City would like an ATMS workstation to monitor and control the traffic intersection from the Deputy Director of Community Services and Water's (Sherwood Natsuhara) office located on the 2nd floor of City Hall (4305, Santa Fe Ave.).

The City is also interested in viewing regional traffic information and possibly incident responses via the IEN network; hence they would like an IEN workstation at City Hall.

The City is interested in having CCTV access but does not desire any special display equipment for viewing images, simply viewing on a workstation being sufficient.

The Department of Community Services and Water have a good working relationship with the City Police Department. The City Police Chief indicated that they are interested in monitoring and responding to incidents within and around the City limits. The City Police Department would like an ATMS and an IEN workstation located in their Dispatch Center in the basement of City Hall.

The Police Department is also interested in Pan/Tilt/Zoom CCTV cameras for traffic and incident monitoring and response. They would like the resolution of the CCTV cameras to be capable of identifying individual faces and vehicle license plates. They would prefer the CCTV system to be digitally encoded and the video distribution to be browser-based. The Police Department would like the CCTV system to be capable of digitally archiving the video.

The Police Department currently has a City Hall surveillance system which they would like to keep separate from any new CCTV system.

Staff

The City is not expected to assign a dedicated operator to monitor the ATMS or the IEN workstation at the Deputy Director's office on the 2nd floor of City Hall. The City indicated that one operator would occasionally monitor the ATMS and the IEN workstation on an exception basis during regular City hall hours.

The ATMS and IEN workstations in the Police Department will be monitored 24 x 7 by the dispatch operator. The dispatch operator would also respond to traffic incidents that are sent through the IEN network.

Communications

The existing ATMS system has two Field Masters connected to a total of 18 intersections using multi-drop analog fiber modems. The City has existing overhead fiber that will be used for the signal communications. As part of this project, the overhead fiber communication needs to be extended to the intersection controller cabinets. The City fiber network is maintained by a division in the City of Vernon Utilities Department (under Mr. Ali Nour) and the City will continue to use them for maintaining fiber.

LCC Control Room

A 120" x 24" space in the corner of the Deputy Director's office in City Hall on the 2nd Floor will be made available to the LCC system components. The Police Department dispatch center has existing console which will accommodate the ATMS workstation and the IEN workstation. The City has identified a locked room in the basement for housing the ATMS and the IEN server equipment and any additional communications and CCTV equipment. Access to the server room is through the Police Department and is very secure.

No display equipment, other than one 19" flat panel LCD monitor for the ATMS and one 19" flat panel LCD monitor for the IEN is desired at the Deputy Director's office. One 19" flat panel LCD monitor per workstation will also be adequate for the two Police Department Dispatch Center workstations.

Miscellaneous

The City has an IT department which currently maintains its computers and this department will take over maintaining the new ATMS and IEN computer equipment. The City signal maintenance is performed by Republic and the City plans on continuing to use them in the future for signal maintenance.